



SEQUENCE LISTING

<110> Salbaum, Michael J.

<120> NOPE Polypeptides, Encoding Nucleic Acids and Methods of Use

<130> P-NI 4552

<140> US 09/754,997

<141> 2001-01-04

<150> US 60/174,496

<151> 2000-01-04

<150> US 60/205,789

<151> 2000-05-19

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Lys Leu Ser Cys Asp Glu Gly Pro Leu Gln Val Ile Leu Gly Pro Glu  
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Gln Ala Val Val Leu Asp Cys Thr Leu Gly Ala Thr Ala Ala Gly Pro  
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ccg acc agg gtg aca tgg agc aag gat gga gac act gta cta gag cat 240  
Pro Thr Arg Val Thr Trp Ser Lys Asp Gly Asp Thr Val Leu Glu His  
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Val Thr Glu Gly Ser Tyr Ser Cys Leu Ala His Ser Pro Leu Gly Val  
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165 170 175

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260 265 270

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gcg ccc ctg gcg gta gtg gtc gag ggg ctg ccc agc gcc ccg act Ala Pro Leu Ala Val Val Arg Glu Gly Leu Pro Ser Ala Pro Thr	420	425		430	1296
cgg gtc aca gcc acg ccg ctg agc agc tcc tct gtg ctg gtg gcc tgg Arg Val Thr Ala Thr Pro Leu Ser Ser Ser Val Leu Val Ala Trp	435	440		445	1344
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aac aat gac acc aca gag ctg cag gtt cgg gac ctg gaa ccc aac acg Asn Asn Asp Thr Thr Glu Leu Gln Val Arg Asp Leu Glu Pro Asn Thr	485	490		495	1488
gat tat gag ttc tac gtg gtg gcc tac tcc cag ctg ggg gcc agc cga Asp Tyr Glu Phe Tyr Val Val Ala Tyr Ser Gln Leu Gly Ala Ser Arg	500	505		510	1536
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Ala Pro Gln Leu Thr Leu Ser Ser Pro Asn Pro Ser Asp Ile Arg Val			
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Glu Val Pro Gly Asn Glu Thr Gln Leu Thr Leu Asn Ser Leu Gln Pro			
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Gln Ser His Val Pro Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys			
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Ile Ser Gly Tyr Lys Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Glu			
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Val Gly Pro Val Arg Leu Lys Lys Val Lys Gln Tyr Glu Leu Thr			
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725

730

735

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755 760 765

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850 855 860

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ctg ctc acc aca gag gga aac atc ttc agt gca gag gtc cat ggc cta 2736  
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Gln	Ala	Val	Val	Leu	Asp	Cys	Thr	Leu	Gly	Ala	Thr	Ala	Ala	Gly	Pro
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Leu	Glu	Gln	Glu	Asp	Ser	Asp	Asp	Glu	Glu	Ala	Leu	Arg	Ile	Trp	Lys
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Val	Thr	Glu	Gly	Ser	Tyr	Ser	Cys	Leu	Ala	His	Ser	Pro	Leu	Gly	Val
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Val	Ala	Ser	Gln	Val	Ala	Val	Val	Lys	Leu	Ala	Thr	Leu	Glu	Asp	Phe
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Ser	Leu	His	Pro	Glu	Ser	Gln	Ile	Val	Glu	Glu	Asn	Gly	Thr	Ala	Arg
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Phe	Glu	Cys	His	Thr	Lys	Gly	Leu	Pro	Ala	Pro	Ile	Ile	Thr	Trp	Glu
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Lys	Trp	Leu	Leu	Gln	Ile	Leu	Asp	Val	Gln	Asp	Ser	Asp	Ala	Gly	Ser
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Ile Val Leu Gly Arg Thr Asn Leu Leu Ile Ala Ser Ala Gln Pro Arg		
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Ser Gln Ala Pro Glu Ala Leu Ser Arg Thr Arg Ala Ser Thr Ala Arg		
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His Asp Gly Ile Pro Leu Arg Pro Asn Gly Arg Val Lys Val Gln Gly		
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385	390	395
Tyr Tyr Gln Cys Val Ala Glu Asn Ser Ala Gly Thr Ala Cys Ala Ala		
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Arg Val Thr Ala Thr Pro Leu Ser Ser Ser Val Leu Val Ala Trp		
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Glu Arg Pro Glu Leu His Ser Glu Gln Ile Ile Gly Phe Ser Leu His		
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Tyr Gln Lys Ala Arg Gly Val Asp Asn Val Glu Tyr Gln Phe Ala Val		
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Ala Trp Leu Pro Leu Pro Ser Ser Leu Ser Asn Gly Gln Val Leu Lys		
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Gln Ser His Val Pro Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys		
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Met Glu Ser Leu Val Val Ser Trp Gln Pro Pro Pro His Pro Thr Gln		
645	650	655
Ile Ser Gly Tyr Lys Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Glu		
660	665	670

Ala Asp Gly Asp Arg Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp  
675 680 685  
Val Gly Pro Val Arg Leu Lys Lys Lys Val Lys Gln Tyr Glu Leu Thr  
690 695 700  
Gln Leu Val Pro Gly Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn  
705 710 715 720  
Lys His Glu Asp Gly Tyr Ala Ala Val Trp Lys Gly Lys Thr Glu Lys  
725 730 735  
Ala Pro Thr Pro Asp Leu Pro Ile Gln Arg Gly Pro Pro Leu Pro Pro  
740 745 750  
Ala His Val His Ala Glu Ser Asn Ser Ser Thr Ser Ile Trp Leu Arg  
755 760 765  
Trp Lys Lys Pro Asp Phe Thr Thr Val Lys Ile Val Asn Tyr Thr Val  
770 775 780  
Arg Phe Gly Pro Trp Gly Leu Arg Asn Ala Ser Leu Val Thr Tyr Tyr  
785 790 795 800  
Thr Ser Ser Gly Glu Asp Ile Leu Ile Gly Gly Leu Lys Pro Phe Thr  
805 810 815  
Lys Tyr Glu Phe Ala Val Gln Ser His Gly Val Asp Met Asp Gly Pro  
820 825 830  
Phe Gly Ser Val Val Glu Arg Ser Thr Leu Pro Asp Arg Pro Ser Thr  
835 840 845  
Pro Pro Ser Asp Leu Arg Leu Ser Pro Leu Thr Pro Ser Thr Val Arg  
850 855 860  
Leu His Trp Cys Pro Pro Thr Glu Pro Asn Gly Glu Ile Val Glu Tyr  
865 870 875 880  
Leu Ile Leu Tyr Ser Asn Asn His Thr Gln Pro Glu His Gln Trp Thr  
885 890 895  
Leu Leu Thr Thr Glu Gly Asn Ile Phe Ser Ala Glu Val His Gly Leu  
900 905 910  
Glu Ser Asp Thr Arg Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu Val  
915 920 925  
Gly Pro Gly Pro Phe Ser Arg Leu Gln Asp Val Ile Thr Leu Gln Glu  
930 935 940  
Thr Phe Ser Asp Ser Leu Asp Val His Ala Val Thr Gly Ile Ile Val  
945 950 955 960  
Gly Val Cys Leu Gly Leu Leu Cys Leu Ala Cys Met Cys Ala Gly  
965 970 975  
Leu Arg Gln Ser Ser His Arg Glu Ala Leu Pro Gly Leu Ser Ser Ser  
980 985 990  
Gly Thr Pro Gly Asn Pro Ala Leu Tyr Thr Arg Ala Arg Leu Gly Pro  
995 1000 1005  
Pro Ser Val Pro Ala Ala His Glu Leu Glu Ser Leu Val His Pro Arg  
1010 1015 1020  
Pro Gln Asp Trp Ser Pro Pro Ser Asp Val Glu Asp Lys Ala Glu  
1025 1030 1035 1040  
Val His Ser Leu Met Gly Gly Ser Val Ser Asp Cys Arg Gly His Ser  
1045 1050 1055  
Lys Arg Lys Ile Ser Trp Ala Gln Ala Gly Gly Pro Asn Trp Ala Gly  
1060 1065 1070  
Ser Trp Ala Gly Cys Glu Leu Pro Gln Gly Ser Gly Pro Arg Pro Ala  
1075 1080 1085  
Leu Thr Arg Ala Leu Leu Pro Pro Ala Gly Thr Gly Gln Thr Leu Leu

1090	1095	1100
Leu Gln Ala Leu Val Tyr Asp Gly Ile Lys Ser Asn Gly Arg Lys Lys		
1105	1110	1115
Pro Ser Pro Ala Cys Arg Asn Gln Val Glu Ala Glu Val Ile Val His		1120
1125	1130	1135
Ser Asp Phe Gly Ala Ser Lys Gly Cys Pro Asp Leu His Leu Gln Asp		
1140	1145	1150
Leu Glu Pro Glu Glu Pro Leu Thr Ala Glu Thr Leu Pro Ser Thr Ser		
1155	1160	1165
Gly Ala Val Asp Leu Ser Gln Gly Ala Asp Trp Leu Gly Arg Glu Leu		
1170	1175	1180
Gly Gly Cys Gln Pro Thr Thr Ser Gly Pro Glu Arg Leu Thr Cys Leu		
1185	1190	1195
Pro Glu Ala Ala Ser Ala Ser Cys Ser Cys Ser Asp Leu Gln Pro Ser		1200
1205	1210	1215
Thr Ala Ile Glu Glu Ala Pro Gly Lys Ser Cys Gln Pro Lys Ala Leu		
1220	1225	1230
Cys Pro Leu Thr Val Ser Pro Ser Leu Pro Arg Ala Pro Val Ser Ser		
1235	1240	1245
Ala Gln Val Pro		
1250		

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gag gga ccc ctg caa gtg atc ctg ggc cct gag cag gct gtg gtg ctg 96  
Glu Gly Pro Leu Gln Val Ile Leu Gly Pro Glu Gln Ala Val Val Leu  
20 25 30

gac tgc act ttg ggg gct aca gct gct ggg cct ccg acc agg gtg aca 144  
Asp Cys Thr Leu Gly Ala Thr Ala Ala Gly Pro Pro Thr Arg Val Thr  
35 40 45

tgg agc aag gat gga gac act gta cta gag cat gag aac ctg cac ctg 192  
Trp Ser Lys Asp Gly Asp Thr Val Leu Glu His Glu Asn Leu His Leu  
50 55 60

cta ccc aat ggc tcc ctg tgg ctg tcc tca ccc cta gag caa gaa gac 240  
Leu Pro Asn Gly Ser Leu Trp Leu Ser Ser Pro Leu Glu Gln Glu Asp  
65 70 75 80

agc gat gat gag gaa gct ctt agg atc tgg aag gtc act gag ggc agc 288  
Ser Asp Asp Glu Glu Ala Leu Arg Ile Trp Lys Val Thr Glu Gly Ser  
85 90 95

tat tcc tgt ctg gcc cac agc ccg cta gga gtg gtg gcc agc cag gtt 336  
Tyr Ser Cys Leu Ala His Ser Pro Leu Gly Val Val Ala Ser Gln Val  
100 105 110

gct gtg gtc aag ctt gcc aca ctc gaa gac ttc tct ctg cac ccc gag 384  
Ala Val Val Lys Leu Ala Thr Leu Glu Asp Phe Ser Leu His Pro Glu  
115 120 125

tcc cag att gtg gag gag aac ggg aca gca cgc ttt gaa tgc cac acc 432  
Ser Gln Ile Val Glu Glu Asn Gly Thr Ala Arg Phe Glu Cys His Thr  
130 135 140

aag ggc ctt cca gcc ccc atc att act tgg gaa aag gac cag gtg acc 480  
Lys Gly Leu Pro Ala Pro Ile Ile Thr Trp Glu Lys Asp Gln Val Thr  
145 150 155 160

gtg cct gag gag ccc cgg ctc atc act ctt ccc aag tgg ctc ctc cag 528  
Val Pro Glu Glu Pro Arg Leu Ile Thr Leu Pro Lys Trp Leu Leu Gln  
165 170 175

atc cta gat gtc cag gac agt gat gca ggc tcc tac cgc tgc gtg gcc 576  
Ile Leu Asp Val Gln Asp Ser Asp Ala Gly Ser Tyr Arg Cys Val Ala  
180 185 190

acc aat tca gcc cgc caa cga ttc agc cag gag gcc tcg ctc act gtg 624  
Thr Asn Ser Ala Arg Gln Arg Phe Ser Gln Glu Ala Ser Leu Thr Val  
195 200 205

gcc ctc aga ggg tct ttg gag gct acc agg ggg cag gat gtg gtc att 672  
Ala Leu Arg Gly Ser Leu Glu Ala Thr Arg Gly Gln Asp Val Val Ile  
210 215 220

gtg gca gcc cca gag aac acc acg gta gtg tct gga cag aat gta gtg 720  
Val Ala Ala Pro Glu Asn Thr Val Val Ser Gly Gln Asn Val Val  
225 230 235 240

atg gag tgc gtg gcc tct gct gac ccc acc cct ttt gtg tcc tgg gtc 768  
Met Glu Cys Val Ala Ser Ala Asp Pro Thr Pro Phe Val Ser Trp Val  
245 250 255

cga cag gat gga aag cct atc tcc acg gat gtc atc gtt ctg ggc cgg 816  
Arg Gln Asp Gly Lys Pro Ile Ser Thr Asp Val Ile Val Leu Gly Arg  
260 265 270

acc aat cta ctc atc gcc agc gcg cag cct cgg cac tct gga gtc tat 864  
Thr Asn Leu Leu Ile Ala Ser Ala Gln Pro Arg His Ser Gly Val Tyr  
275 280 285

gtc tgc cga gcc aac aag ccc ctc acg cgt gac ttc gcc act gcg gct 912

Val Cys Arg Ala Asn Lys Pro Leu Thr Arg Asp Phe Ala Thr Ala Ala  
290 295 300

gct gag ctc cga gtg ctt gct gcc cca gcc atc tcg cag gca ccc gag 960  
Ala Glu Leu Arg Val Leu Ala Ala Pro Ala Ile Ser Gln Ala Pro Glu  
305 310 315 320

gcg ctc tcg cggtt acg cggtt gcc acc gctt cgc ttc gtgtt tgc cggtt gctt 1008  
Ala Leu Ser Arg Thr Arg Ala Ser Thr Ala Arg Phe Val Cys Arg Ala  
325 330 335

tcc ggg gag cca cgg ccc gctt ctgtt cac tgg ctgtt cac gac ggg atc ccgtt 1056  
Ser Gly Glu Pro Arg Pro Ala Leu His Trp Leu His Asp Gly Ile Pro  
340 345 350

ttt cga ccc aat ggg cgc gtc aag gtgtt cag ggc ggtt ggc ggc agc ttgtt 1104  
Leu Arg Pro Asn Gly Arg Val Lys Val Gln Gly Gly Gly Ser Leu  
355 360 365

gtc atc act cag atc ggc ctgtt cag gac gctt ggc tac tac cag tgc gta 1152  
Val Ile Thr Gln Ile Gly Leu Gln Asp Ala Gly Tyr Tyr Gln Cys Val  
370 375 380

gca gaa aac agc gctt gga act gcc tgtt gcc gctt gcg ccc ctgtt gctt gta 1200  
Ala Glu Asn Ser Ala Gly Thr Ala Cys Ala Ala Pro Leu Ala Val  
385 390 395 400

gtt gtgtt cgc gag ggg ctgtt ccc agc gctt ccgtt act cgg gtc aca gctt acgtt 1248  
Val Val Arg Glu Gly Leu Pro Ser Ala Pro Thr Arg Val Thr Ala Thr  
405 410 415

ccg ctgtt agc agc tcc tct gtgtt ctgtt gctt ggg tgg gag cgg cctt gag ttgtt 1296  
Pro Leu Ser Ser Val Leu Val Ala Trp Glu Arg Pro Glu Leu  
420 425 430

cac agc gag caa atc att ggc ttc tct ctt cac tac caa aag gca agg 1344  
His Ser Glu Gln Ile Ile Gly Phe Ser Leu His Tyr Gln Lys Ala Arg  
435 440 445

gga gtgtt gac aat gtgtt gag tac cag ttt gca gta aac aat gac acc aca 1392  
Gly Val Asp Asn Val Glu Tyr Gln Phe Ala Val Asn Asn Asp Thr Thr  
450 455 460

gag ctgtt cag gtt cggtt gac ctgtt gaa ccc aac acgtt gat tat gag ttc tac 1440  
Glu Leu Gln Val Arg Asp Leu Glu Pro Asn Thr Asp Tyr Glu Phe Tyr  
465 470 475 480

gtt gtgtt gcc tac tcc cag ctgtt ggg gctt agc cga acc tcc agc cca gctt 1488  
Val Val Ala Tyr Ser Gln Leu Gly Ala Ser Arg Thr Ser Ser Pro Ala  
485 490 495

ctgtt gtgtt cat aca ctgtt gag gat gtc ccc agc gca gca ccc cag ctt acc 1536  
Leu Val His Thr Leu Asp Asp Val Pro Ser Ala Ala Pro Gln Leu Thr

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ttg tcc agc ccc aac ccc tcg gac atc agg gtg gca tgg ctg ccc ctg Leu Ser Ser Pro Asn Pro Ser Asp Ile Arg Val Ala Trp Leu Pro Leu 515	520	525	1584
ccc tcc agc ctg agc aat gga cag gtg ctg aag tac aag ata gag tac Pro Ser Ser Leu Ser Asn Gly Gln Val Leu Lys Tyr Lys Ile Glu Tyr 530	535	540	1632
ggt ttg ggg aag gaa gat cag gtt ttc tcc acc gag gtg cct gga aat Gly Leu Gly Lys Glu Asp Gln Val Phe Ser Thr Glu Val Pro Gly Asn 545	550	555	1680
gag aca caa ctt acg tta aac tca ctt cag cca aac aaa gtg tac cga Glu Thr Gln Leu Thr Leu Asn Ser Leu Gln Pro Asn Lys Val Tyr Arg 565	570	575	1728
gtc cg <sup>g</sup> att tca gct ggc act ggc gct ggc tat gga gtc cct tct cag Val Arg Ile Ser Ala Gly Thr Gly Ala Gly Tyr Gly Val Pro Ser Gln 580	585	590	1776
tgg atg cag cac agg aca cct ggt gtg cac aac cag agc cat gtt ccc Trp Met Gln His Arg Thr Pro Gly Val His Asn Gln Ser His Val Pro 595	600	605	1824
ttt gcc cct gca gaa ttg aag gtg agg gca aag atg gag tcc ctg gtg Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys Met Glu Ser Leu Val 610	615	620	1872
gtg tca tgg cag ccg ccc cct cac ccc acc cag atc tct gga tac aaa Val Ser Trp Gln Pro Pro His Pro Thr Gln Ile Ser Gly Tyr Lys 625	630	635	1920
ctc tac tgg gga gag gtg gga aca gag gag gca gat ggt gac cgc Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Ala Asp Gly Asp Arg 645	650	655	1968
ccc cca ggg ggt cgt gga gat caa gct tgg gac gtc ggg ccc gtg cgg Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp Val Gly Pro Val Arg 660	665	670	2016
ctg aag aag aaa gtg aag cag tat gaa ctg acc cag tta gtc cct ggc Leu Lys Lys Val Lys Gln Tyr Glu Leu Thr Gln Leu Val Pro Gly 675	680	685	2064
agg ccg tac gag gtg aag ctc gta gct ttc aac aaa cac gag gac ggc Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn His Glu Asp Gly 690	695	700	2112
tac gct gct gtg tgg aag ggc aag acg gag aag gcg ccc acg cca gac Tyr Ala Ala Val Trp Lys Gly Lys Thr Glu Lys Ala Pro Thr Pro Asp 705	710	715	2160
		720	

ctg cct atc cag agg ggg cca ccg ctg cct cct gcc cat gtc cac gca Leu Pro Ile Gln Arg Gly Pro Pro Leu Pro Pro Ala His Val His Ala 725 730 735	2208
gag tca aac agc tcc act tcc att tgg ctt cgg tgg aag aag cca gac Glu Ser Asn Ser Ser Thr Ser Ile Trp Leu Arg Trp Lys Lys Pro Asp 740 745 750	2256
ttt acc act gtc aag att gtc aac tac act gta cgc ttc ggc ccc tgg Phe Thr Thr Val Lys Ile Val Asn Tyr Thr Val Arg Phe Gly Pro Trp 755 760 765	2304
ggg ctc agg aat gct tcc ctg gtc acc tac tat acc agc tct gga gaa Gly Leu Arg Asn Ala Ser Leu Val Thr Tyr Tyr Thr Ser Ser Gly Glu 770 775 780	2352
gac att ctc att ggc ggc ctg aaa cca ttt acc aag tac gag ttt gcg Asp Ile Leu Ile Gly Gly Leu Lys Pro Phe Thr Lys Tyr Glu Phe Ala 785 790 795 800	2400
gta cag tcc cac gga gtg gat atg gat ggg ccc ttt ggc tcc gtc gta Val Gln Ser His Gly Val Asp Met Asp Gly Pro Phe Gly Ser Val Val 805 810 815	2448
gaa cgc tcc acc ctg cct gac cgg cct tca aca cct cct tct gac ctg Glu Arg Ser Thr Leu Pro Asp Arg Pro Ser Thr Pro Pro Ser Asp Leu 820 825 830	2496
cgc ctg agc ccc ctg aca cca tcc acc gtt cgg tta cac tgg tgt ccc Arg Leu Ser Pro Leu Thr Pro Ser Thr Val Arg Leu His Trp Cys Pro 835 840 845	2544
ccc acg gag ccc aat ggt gag att gtg gag tat cta att ctc tac agc Pro Thr Glu Pro Asn Gly Glu Ile Val Glu Tyr Leu Ile Leu Tyr Ser 850 855 860	2592
aac aac cac acc cag ccc gaa cac cag tgg aca ctg ctc acc aca gag Asn Asn His Thr Gln Pro Glu His Gln Trp Thr Leu Leu Thr Thr Glu 865 870 875 880	2640
gga aac atc ttc agt gca gag gtc cat ggc cta gag agt gac act cgg Gly Asn Ile Phe Ser Ala Glu Val His Gly Leu Glu Ser Asp Thr Arg 885 890 895	2688
tat ttc ttc aag atg gga gcc cgc aca gag gtg ggg cct ggg ccc ttt Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu Val Gly Pro Gly Pro Phe 900 905 910	2736
tcc cgc ttg cag gat gtg att act ctg caa gag aca ttc tca gac tcc Ser Arg Leu Gln Asp Val Ile Thr Leu Gln Glu Thr Phe Ser Asp Ser 915 920 925	2784

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Leu Asp Val His  
930

2796

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Asp Cys Thr Leu Gly Ala Thr Ala Ala Gly Pro Pro Thr Arg Val Thr  
35 40 45  
Trp Ser Lys Asp Gly Asp Thr Val Leu Glu His Glu Asn Leu His Leu  
50 55 60  
Leu Pro Asn Gly Ser Leu Trp Leu Ser Ser Pro Leu Glu Gln Glu Asp  
65 70 75 80  
Ser Asp Asp Glu Glu Ala Leu Arg Ile Trp Lys Val Thr Glu Gly Ser  
85 90 95  
Tyr Ser Cys Leu Ala His Ser Pro Leu Gly Val Val Ala Ser Gln Val  
100 105 110  
Ala Val Val Lys Leu Ala Thr Leu Glu Asp Phe Ser Leu His Pro Glu  
115 120 125  
Ser Gln Ile Val Glu Glu Asn Gly Thr Ala Arg Phe Glu Cys His Thr  
130 135 140  
Lys Gly Leu Pro Ala Pro Ile Ile Thr Trp Glu Lys Asp Gln Val Thr  
145 150 155 160  
Val Pro Glu Glu Pro Arg Leu Ile Thr Leu Pro Lys Trp Leu Leu Gln  
165 170 175  
Ile Leu Asp Val Gln Asp Ser Asp Ala Gly Ser Tyr Arg Cys Val Ala  
180 185 190  
Thr Asn Ser Ala Arg Gln Arg Phe Ser Gln Glu Ala Ser Leu Thr Val  
195 200 205  
Ala Leu Arg Gly Ser Leu Glu Ala Thr Arg Gly Gln Asp Val Val Ile  
210 215 220  
Val Ala Ala Pro Glu Asn Thr Thr Val Val Ser Gly Gln Asn Val Val  
225 230 235 240  
Met Glu Cys Val Ala Ser Ala Asp Pro Thr Pro Phe Val Ser Trp Val  
245 250 255  
Arg Gln Asp Gly Lys Pro Ile Ser Thr Asp Val Ile Val Leu Gly Arg  
260 265 270  
Thr Asn Leu Leu Ile Ala Ser Ala Gln Pro Arg His Ser Gly Val Tyr  
275 280 285  
Val Cys Arg Ala Asn Lys Pro Leu Thr Arg Asp Phe Ala Thr Ala Ala  
290 295 300  
Ala Glu Leu Arg Val Leu Ala Ala Pro Ala Ile Ser Gln Ala Pro Glu  
305 310 315 320  
Ala Leu Ser Arg Thr Arg Ala Ser Thr Ala Arg Phe Val Cys Arg Ala  
325 330 335

Ser Gly Glu Pro Arg Pro Ala Leu His Trp Leu His Asp Gly Ile Pro  
340 345 350  
Leu Arg Pro Asn Gly Arg Val Lys Val Gln Gly Gly Gly Ser Leu  
355 360 365  
Val Ile Thr Gln Ile Gly Leu Gln Asp Ala Gly Tyr Tyr Gln Cys Val  
370 375 380  
Ala Glu Asn Ser Ala Gly Thr Ala Cys Ala Ala Pro Leu Ala Val  
385 390 395 400  
Val Val Arg Glu Gly Leu Pro Ser Ala Pro Thr Arg Val Thr Ala Thr  
405 410 415  
Pro Leu Ser Ser Ser Val Leu Val Ala Trp Glu Arg Pro Glu Leu  
420 425 430  
His Ser Glu Gln Ile Ile Gly Phe Ser Leu His Tyr Gln Lys Ala Arg  
435 440 445  
Gly Val Asp Asn Val Glu Tyr Gln Phe Ala Val Asn Asn Asp Thr Thr  
450 455 460  
Glu Leu Gln Val Arg Asp Leu Glu Pro Asn Thr Asp Tyr Glu Phe Tyr  
465 470 475 480  
Val Val Ala Tyr Ser Gln Leu Gly Ala Ser Arg Thr Ser Ser Pro Ala  
485 490 495  
Leu Val His Thr Leu Asp Asp Val Pro Ser Ala Ala Pro Gln Leu Thr  
500 505 510  
Leu Ser Ser Pro Asn Pro Ser Asp Ile Arg Val Ala Trp Leu Pro Leu  
515 520 525  
Pro Ser Ser Leu Ser Asn Gly Gln Val Leu Lys Tyr Lys Ile Glu Tyr  
530 535 540  
Gly Leu Gly Lys Glu Asp Gln Val Phe Ser Thr Glu Val Pro Gly Asn  
545 550 555 560  
Glu Thr Gln Leu Thr Leu Asn Ser Leu Gln Pro Asn Lys Val Tyr Arg  
565 570 575  
Val Arg Ile Ser Ala Gly Thr Gly Ala Gly Tyr Gly Val Pro Ser Gln  
580 585 590  
Trp Met Gln His Arg Thr Pro Gly Val His Asn Gln Ser His Val Pro  
595 600 605  
Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys Met Glu Ser Leu Val  
610 615 620  
Val Ser Trp Gln Pro Pro His Pro Thr Gln Ile Ser Gly Tyr Lys  
625 630 635 640  
Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Ala Asp Gly Asp Arg  
645 650 655  
Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp Val Gly Pro Val Arg  
660 665 670  
Leu Lys Lys Val Lys Gln Tyr Glu Leu Thr Gln Leu Val Pro Gly  
675 680 685  
Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn Lys His Glu Asp Gly  
690 695 700  
Tyr Ala Ala Val Trp Lys Gly Lys Thr Glu Lys Ala Pro Thr Pro Asp  
705 710 715 720  
Leu Pro Ile Gln Arg Gly Pro Pro Leu Pro Pro Ala His Val His Ala  
725 730 735  
Glu Ser Asn Ser Ser Thr Ser Ile Trp Leu Arg Trp Lys Lys Pro Asp  
740 745 750  
Phe Thr Thr Val Lys Ile Val Asn Tyr Thr Val Arg Phe Gly Pro Trp

755	760	765
Gly Leu Arg Asn Ala Ser Leu Val Thr Tyr Tyr Thr Ser Ser Gly Glu		
770	775	780
Asp Ile Leu Ile Gly Gly Leu Lys Pro Phe Thr Lys Tyr Glu Phe Ala		
785	790	795
Val Gln Ser His Gly Val Asp Met Asp Gly Pro Phe Gly Ser Val Val		
805	810	815
Glu Arg Ser Thr Leu Pro Asp Arg Pro Ser Thr Pro Pro Ser Asp Leu		
820	825	830
Arg Leu Ser Pro Leu Thr Pro Ser Thr Val Arg Leu His Trp Cys Pro		
835	840	845
Pro Thr Glu Pro Asn Gly Glu Ile Val Glu Tyr Leu Ile Leu Tyr Ser		
850	855	860
Asn Asn His Thr Gln Pro Glu His Gln Trp Thr Leu Leu Thr Thr Glu		
865	870	875
Gly Asn Ile Phe Ser Ala Glu Val His Gly Leu Glu Ser Asp Thr Arg		
885	890	895
Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu Val Gly Pro Gly Pro Phe		
900	905	910
Ser Arg Leu Gln Asp Val Ile Thr Leu Gln Glu Thr Phe Ser Asp Ser		
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Leu Asp Val His		
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acc cca gga aac cca gcg ctc tac aca aga gct cgg ctt ggg cct ccc 96  
Thr Pro Gly Asn Pro Ala Leu Tyr Thr Arg Ala Arg Leu Gly Pro Pro  
20 25 30

agt gtc cct gct gcc cat gag ttg gag tcc ctc gtg cat cct cgt ccc 144  
Ser Val Pro Ala Ala His Glu Leu Glu Ser Leu Val His Pro Arg Pro  
35 40 45

cag gat tgg tcc cca cca ccc tca gat gtg gaa gac aag gct gaa gta 192  
Gln Asp Trp Ser Pro Pro Ser Asp Val Glu Asp Lys Ala Glu Val  
50 55 60

cac agc ctt atg ggt ggc agt gtt tca gat tgc cgg ggc cac tcc aag 240  
His Ser Leu Met Gly Gly Ser Val Ser Asp Cys Arg Gly His Ser Lys

65	70	75	80	
aga aag atc tcc tgg gct cag gca ggg gga cca aac tgg gca ggc tcc				288
Arg Lys Ile Ser Trp Ala Gln Ala Gly Gly Pro Asn Trp Ala Gly Ser				
85	90	95		
tgg gca ggc tgt gag ctg ccc cag ggt agt ggt cca agg ccg gct ctg				336
Trp Ala Gly Cys Glu Leu Pro Gln Gly Ser Gly Pro Arg Pro Ala Leu				
100	105	110		
acc cgt gct ctg ctg cct cca gcg gga acc ggg cag aca ctg ctg ctg				384
Thr Arg Ala Leu Leu Pro Pro Ala Gly Thr Gly Gln Thr Leu Leu Leu				
115	120	125		
caa gcc ctg gtg tat gac ggc ata aag agc aac ggg aga aag aag ccg				432
Gln Ala Leu Val Tyr Asp Gly Ile Lys Ser Asn Gly Arg Lys Lys Pro				
130	135	140		
tcc cca gcc tgc agg aat cag gtg gaa gct gag gtc att gtc cac tcc				480
Ser Pro Ala Cys Arg Asn Gln Val Glu Ala Glu Val Ile Val His Ser				
145	150	155	160	
gac ttc ggt gca tcc aaa gga tgt cct gac ctc cac ctc caa gac ctg				528
Asp Phe Gly Ala Ser Lys Gly Cys Pro Asp Leu His Leu Gln Asp Leu				
165	170	175		
gag cca gag gaa cca ctg act gca gag act ctg cct tcc acg tct gga				576
Glu Pro Glu Glu Pro Leu Thr Ala Glu Thr Leu Pro Ser Thr Ser Gly				
180	185	190		
gct gtg gat ctg tct caa gga gca gac tgg ctg ggc agg gag ctg gga				624
Ala Val Asp Leu Ser Gln Gly Ala Asp Trp Leu Gly Arg Glu Leu Gly				
195	200	205		
ggg tgc caa cca aca acc agt ggg cca gag agg ctc acc tgc ttg cca				672
Gly Cys Gln Pro Thr Thr Ser Gly Pro Glu Arg Leu Thr Cys Leu Pro				
210	215	220		
gaa gca gcc agt gcc tcc tgc tcc tgc tca gac ctc cag ccc agc act				720
Glu Ala Ala Ser Ala Ser Cys Ser Cys Ser Asp Leu Gln Pro Ser Thr				
225	230	235	240	
gct ata gag gag gcc cct ggg aaa agc tgc cag ccc aaa gcc ctg tgt				768
Ala Ile Glu Glu Ala Pro Gly Lys Ser Cys Gln Pro Lys Ala Leu Cys				
245	250	255		
cct cta aca gtc agc cca agc ctt ccc agg gcc cct gtc tcc tct gct				816
Pro Leu Thr Val Ser Pro Ser Leu Pro Arg Ala Pro Val Ser Ser Ala				
260	265	270		
cag gtc ccc				825
Gln Val Pro				
275				

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<212> PRT  
<213> Mus musculus

<400> 6

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20 25 30

Ser Val Pro Ala Ala His Glu Leu Glu Ser Leu Val His Pro Arg Pro  
35 40 45

Gln Asp Trp Ser Pro Pro Pro Ser Asp Val Glu Asp Lys Ala Glu Val  
50 55 60

His Ser Leu Met Gly Gly Ser Val Ser Asp Cys Arg Gly His Ser Lys  
65 70 75 80

Arg Lys Ile Ser Trp Ala Gln Ala Gly Gly Pro Asn Trp Ala Gly Ser  
85 90 95

Trp Ala Gly Cys Glu Leu Pro Gln Gly Ser Gly Pro Arg Pro Ala Leu  
100 105 110

Thr Arg Ala Leu Leu Pro Pro Ala Gly Thr Gly Gln Thr Leu Leu Leu  
115 120 125

Gln Ala Leu Val Tyr Asp Gly Ile Lys Ser Asn Gly Arg Lys Lys Pro  
130 135 140

Ser Pro Ala Cys Arg Asn Gln Val Glu Ala Glu Val Ile Val His Ser  
145 150 155 160

Asp Phe Gly Ala Ser Lys Gly Cys Pro Asp Leu His Leu Gln Asp Leu  
165 170 175

Glu Pro Glu Glu Pro Leu Thr Ala Glu Thr Leu Pro Ser Thr Ser Gly  
180 185 190

Ala Val Asp Leu Ser Gln Gly Ala Asp Trp Leu Gly Arg Glu Leu Gly  
195 200 205

Gly Cys Gln Pro Thr Thr Ser Gly Pro Glu Arg Leu Thr Cys Leu Pro  
210 215 220

Glu Ala Ala Ser Ala Ser Cys Ser Cys Ser Asp Leu Gln Pro Ser Thr  
225 230 235 240

Ala Ile Glu Glu Ala Pro Gly Lys Ser Cys Gln Pro Lys Ala Leu Cys  
245 250 255

Pro Leu Thr Val Ser Pro Ser Leu Pro Arg Ala Pro Val Ser Ser Ala  
260 265 270

Gln Val Pro  
275

<210> 7  
<211> 243  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS

<222> (1) ... (243)

<400> 7  
cct gag cag gct gtg gtg ctg gac tgc act ttg ggg gct aca gct gct 48  
Pro Glu Gln Ala Val Val Leu Asp Cys Thr Leu Gly Ala Thr Ala Ala  
1 5 10 15  
  
ggg cct ccg acc agg gtg aca tgg agc aag gat gga gac act gta cta 96  
Gly Pro Pro Thr Arg Val Thr Trp Ser Lys Asp Gly Asp Thr Val Leu  
20 25 30  
  
gag cat gag aac ctg cac ctg cta ccc aat ggc tcc ctg tgg ctg tcc 144  
Glu His Glu Asn Leu His Leu Leu Pro Asn Gly Ser Leu Trp Leu Ser  
35 40 45  
  
tca ccc cta gag caa gaa gac agc gat gat gag gaa gct ctt agg atc 192  
Ser Pro Leu Glu Gln Glu Asp Ser Asp Asp Glu Glu Ala Leu Arg Ile  
50 55 60  
  
tgg aag gtc act gag ggc agc tat tcc tgt ctg gcc cac agc ccg cta 240  
Trp Lys Val Thr Glu Gly Ser Tyr Ser Cys Leu Ala His Ser Pro Leu  
65 70 75 80  
  
gga 243  
Gly

<210> 8  
<211> 81  
<212> PRT  
<213> Mus musculus

<400> 8  
Pro Glu Gln Ala Val Val Leu Asp Cys Thr Leu Gly Ala Thr Ala Ala  
1 5 10 15  
Gly Pro Pro Thr Arg Val Thr Trp Ser Lys Asp Gly Asp Thr Val Leu  
20 25 30  
Glu His Glu Asn Leu His Leu Leu Pro Asn Gly Ser Leu Trp Leu Ser  
35 40 45  
Ser Pro Leu Glu Gln Glu Asp Ser Asp Asp Glu Glu Ala Leu Arg Ile  
50 55 60  
Trp Lys Val Thr Glu Gly Ser Tyr Ser Cys Leu Ala His Ser Pro Leu  
65 70 75 80  
Gly

<210> 9  
<211> 192  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
<222> (1)...(192)

<400> 9  
gag aac ggg aca gca cgc ttt gaa tgc cac acc aag ggc ctt cca gcc 48  
Glu Asn Gly Thr Ala Arg Phe Glu Cys His Thr Lys Gly Leu Pro Ala  
1 5 10 15

ccc atc att act tgg gaa aag gac cag gtg acc cct gag gag ccc 96  
Pro Ile Ile Thr Trp Glu Lys Asp Gln Val Thr Val Pro Glu Glu Pro  
20 25 30

cgg ctc atc act ctt ccc aag tgg ctc ctc cag atc cta gat gtc cag 144  
Arg Leu Ile Thr Leu Pro Lys Trp Leu Leu Gln Ile Leu Asp Val Gln  
35 40 45

gac agt gat gca ggc tcc tac cgc tgc gtg gcc acc aat tca gcc cgc 192  
Asp Ser Asp Ala Gly Ser Tyr Arg Cys Val Ala Thr Asn Ser Ala Arg  
50 55 60

<210> 10  
<211> 64  
<212> PRT  
<213> Mus musculus

<400> 10  
Glu Asn Gly Thr Ala Arg Phe Glu Cys His Thr Lys Gly Leu Pro Ala  
1 5 10 15  
Pro Ile Ile Thr Trp Glu Lys Asp Gln Val Thr Val Pro Glu Glu Pro  
20 25 30  
Arg Leu Ile Thr Leu Pro Lys Trp Leu Leu Gln Ile Leu Asp Val Gln  
35 40 45  
Asp Ser Asp Ala Gly Ser Tyr Arg Cys Val Ala Thr Asn Ser Ala Arg  
50 55 60

<210> 11  
<211> 189  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
<222> (1)...(189)

<400> 11  
tct gga cag aat gta gtg atg gag tgc gtg gcc tct gct gac ccc acc 48  
Ser Gly Gln Asn Val Val Met Glu Cys Val Ala Ser Ala Asp Pro Thr  
1 5 10 15

cct ttt gtg tcc tgg gtc cga cag gat gga aag cct atc tcc acg gat 96  
Pro Phe Val Ser Trp Val Arg Gln Asp Gly Lys Pro Ile Ser Thr Asp  
20 25 30

gtc atc gtt ctg ggc cg<sup>g</sup> acc aat cta ctc atc gcc agc gc<sup>g</sup> cag cct 144  
Val Ile Val Leu Gly Arg Thr Asn Leu Leu Ile Ala Ser Ala Gln Pro  
35 40 45

cgg cac tct gga gtc tat gtc tgc cga gcc aac aag ccc ctc acg 189  
Arg His Ser Gly Val Tyr Val Cys Arg Ala Asn Lys Pro Leu Thr  
50 55 60

<210> 12  
<211> 63  
<212> PRT  
<213> Mus musculus

<400> 12  
Ser Gly Gln Asn Val Val Met Glu Cys Val Ala Ser Ala Asp Pro Thr  
1 5 10 15  
Pro Phe Val Ser Trp Val Arg Gln Asp Gly Lys Pro Ile Ser Thr Asp  
20 25 30  
Val Ile Val Leu Gly Arg Thr Asn Leu Leu Ile Ala Ser Ala Gln Pro  
35 40 45  
Arg His Ser Gly Val Tyr Val Cys Arg Ala Asn Lys Pro Leu Thr  
50 55 60

<210> 13  
<211> 195  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
<222> (1)...(195)

<400> 13  
cg<sup>g</sup> gc<sup>c</sup> agc acc gc<sup>g</sup> cg<sup>c</sup> ttc gtg tgc cg<sup>g</sup> gc<sup>g</sup> tcc gg<sup>g</sup> gag cc<sup>a</sup> cg<sup>g</sup> 48  
Arg Ala Ser Thr Ala Arg Phe Val Cys Arg Ala Ser Gly Glu Pro Arg  
1 5 10 15

cc<sup>c</sup> gc<sup>g</sup> ctg cac tgg ctg cac gac gg<sup>g</sup> atc cc<sup>g</sup> ttg cg<sup>a</sup> cc<sup>c</sup> aat gg<sup>g</sup> 96  
Pro Ala Leu His Trp Leu His Asp Gly Ile Pro Leu Arg Pro Asn Gly  
20 25 30

cg<sup>c</sup> gtc aag gtg cag gg<sup>c</sup> ggt gg<sup>c</sup> gg<sup>c</sup> agc ttg gtc atc act cag atc 144  
Arg Val Lys Val Gln Gly Gly Gly Ser Leu Val Ile Thr Gln Ile  
35 40 45

gg<sup>c</sup> ctg cag gac gct gg<sup>c</sup> tac tac cag tgc gta gca gaa aac agc gc<sup>g</sup> 192

Gly Leu Gln Asp Ala Gly Tyr Tyr Gln Cys Val Ala Glu Asn Ser Ala  
50 55 60

gga 195  
Gly  
65

<210> 14  
<211> 65  
<212> PRT  
<213> Mus musculus

<400> 14  
Arg Ala Ser Thr Ala Arg Phe Val Cys Arg Ala Ser Gly Glu Pro Arg  
1 5 10 15  
Pro Ala Leu His Trp Leu His Asp Gly Ile Pro Leu Arg Pro Asn Gly  
20 25 30  
Arg Val Lys Val Gln Gly Gly Gly Ser Leu Val Ile Thr Gln Ile  
35 40 45  
Gly Leu Gln Asp Ala Gly Tyr Tyr Gln Cys Val Ala Glu Asn Ser Ala  
50 55 60  
Gly  
65

<210> 15  
<211> 249  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
<222> (1) ... (249)

<400> 15  
agc gcc ccg act cgg gtc aca gcc acg ccg ctg agc agc tcc tct gtg 48  
Ser Ala Pro Thr Arg Val Thr Ala Thr Pro Leu Ser Ser Ser Val  
1 5 10 15

ctg gtg gcc tgg gag cgg cct gag ttg cac agc gag caa atc att ggc 96  
Leu Val Ala Trp Glu Arg Pro Glu Leu His Ser Glu Gln Ile Ile Gly  
20 25 30

ttc tct ctt cac tac caa aag gca agg gga gtg gac aat gtg gag tac 144  
Phe Ser Leu His Tyr Gln Lys Ala Arg Gly Val Asp Asn Val Glu Tyr  
35 40 45

cag ttt gca gta aac aat gac acc aca gag ctg cag gtt cgg gac ctg 192  
Gln Phe Ala Val Asn Asn Asp Thr Thr Glu Leu Gln Val Arg Asp Leu  
50 55 60

gaa ccc aac acg gat tat gag ttc tac gtg gtg gcc tac tcc cag ctg 240

Glu Pro Asn Thr Asp Tyr Glu Phe Tyr Val Val Ala Tyr Ser Gln Leu  
65 70 75 80

ggg gcc agc 249  
Gly Ala Ser

<210> 16  
<211> 83  
<212> PRT  
<213> Mus musculus

<400> 16  
Ser Ala Pro Thr Arg Val Thr Ala Thr Pro Leu Ser Ser Ser Ser Val  
1 5 10 15  
Leu Val Ala Trp Glu Arg Pro Glu Leu His Ser Glu Gln Ile Ile Gly  
20 25 30  
Phe Ser Leu His Tyr Gln Lys Ala Arg Gly Val Asp Asn Val Glu Tyr  
35 40 45  
Gln Phe Ala Val Asn Asn Asp Thr Thr Glu Leu Gln Val Arg Asp Leu  
50 55 60  
Glu Pro Asn Thr Asp Tyr Glu Phe Tyr Val Val Ala Tyr Ser Gln Leu  
65 70 75 80  
Gly Ala Ser

<210> 17  
<211> 249  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
<222> (1)...(249)

<400> 17  
agc gca gca ccc cag ctt acc ttg tcc agc ccc aac ccc tcg gac atc 48  
Ser Ala Ala Pro Gln Leu Thr Leu Ser Ser Pro Asn Pro Ser Asp Ile  
1 5 10 15

agg gtg gca tgg ctg ccc ctg ccc tcc agc ctg agc aat gga cag gtg 96  
Arg Val Ala Trp Leu Pro Leu Pro Ser Ser Leu Ser Asn Gly Gln Val  
20 25 30

ctg aag tac aag ata gag tac ggt ttg ggg aag gaa gat cag gtt ttc 144  
Leu Lys Tyr Lys Ile Glu Tyr Gly Leu Gly Lys Glu Asp Gln Val Phe  
35 40 45

tcc acc gag gtg cct gga aat gag aca caa ctt acg tta aac tca ctt 192  
Ser Thr Glu Val Pro Gly Asn Glu Thr Gln Leu Thr Leu Asn Ser Leu  
50 55 60

cag cca aac aaa gtg tac cga gtc cg<sub>g</sub> att tca gct ggc act ggc gct 240  
Gln Pro Asn Lys Val Tyr Arg Val Arg Ile Ser Ala Gly Thr Gly Ala  
65 70 75 80

ggc tat gga 249  
Gly Tyr Gly

<210> 18  
<211> 83  
<212> PRT  
<213> Mus musculus

<400> 18  
Ser Ala Ala Pro Gln Leu Thr Leu Ser Ser Pro Asn Pro Ser Asp Ile  
1 5 10 15  
Arg Val Ala Trp Leu Pro Leu Pro Ser Ser Leu Ser Asn Gly Gln Val  
20 25 30  
Leu Lys Tyr Lys Ile Glu Tyr Gly Leu Gly Lys Glu Asp Gln Val Phe  
35 40 45  
Ser Thr Glu Val Pro Gly Asn Glu Thr Gln Leu Thr Leu Asn Ser Leu  
50 55 60  
Gln Pro Asn Lys Val Tyr Arg Val Arg Ile Ser Ala Gly Thr Gly Ala  
65 70 75 80  
Gly Tyr Gly

<210> 19  
<211> 288  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
<222> (1)...(288)

<400> 19  
ttt gcc cct gca gaa ttg aag gtg agg gca aag atg gag tcc ctg gtg 48  
Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys Met Glu Ser Leu Val  
1 5 10 15

gtg tca tgg cag ccg ccc cct cac ccc acc cag atc tct gga tac aaa 96  
Val Ser Trp Gln Pro Pro His Pro Thr Gln Ile Ser Gly Tyr Lys  
20 25 30

ctc tac tgg gga gag gtg gga aca gag gag gca gat ggt gac cgc 144  
Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Ala Asp Gly Asp Arg  
35 40 45

ccc cca ggg ggt cgt gga gat caa gct tgg gac gtc ggg ccc gtg cgg 192

Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp Val Gly Pro Val Arg  
50 55 60

ctg aag aag aaa gtg aag cag tat gaa ctg acc cag tta gtc cct ggc 240  
Leu Lys Lys Lys Val Lys Gln Tyr Glu Leu Thr Gln Leu Val Pro Gly  
65 70 75 80

agg ccg tac gag gtg aag ctc gta gct ttc aac aaa cac gag gac ggc 288  
Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn Lys His Glu Asp Gly  
85 90 95

<210> 20

<211> 96

<212> PRT

<213> Mus musculus

<400> 20

Phe Ala Pro Ala Glu Leu Lys Val Arg Ala Lys Met Glu Ser Leu Val  
1 5 10 15

Val Ser Trp Gln Pro Pro Pro His Pro Thr Gln Ile Ser Gly Tyr Lys  
20 25 30

Leu Tyr Trp Gly Glu Val Gly Thr Glu Glu Ala Asp Gly Asp Arg  
35 40 45

Pro Pro Gly Gly Arg Gly Asp Gln Ala Trp Asp Val Gly Pro Val Arg  
50 55 60

Leu Lys Lys Lys Val Lys Gln Tyr Glu Leu Thr Gln Leu Val Pro Gly  
65 70 75 80

Arg Pro Tyr Glu Val Lys Leu Val Ala Phe Asn Lys His Glu Asp Gly  
85 90 95

<210> 21

<211> 246

<212> DNA

<213> Mus musculus

<220>

<221> CDS

<222> (1)...(246)

<400> 21

ctg cct cct gcc cat gtc cac gca gag tca aac agc tcc act tcc att 48  
Leu Pro Pro Ala His Val His Ala Glu Ser Asn Ser Ser Thr Ser Ile  
1 5 10 15

tgg ctt cgg tgg aag aag cca gac ttt acc act gtc aag att gtc aac 96  
Trp Leu Arg Trp Lys Lys Pro Asp Phe Thr Thr Val Lys Ile Val Asn  
20 25 30

tac act gta cgc ttc ggc ccc tgg ggg ctc agg aat gct tcc ctg gtc 144  
Tyr Thr Val Arg Phe Gly Pro Trp Gly Leu Arg Asn Ala Ser Leu Val

35

40

45

acc tac tat acc agc tct gga gaa gac att ctc att ggc ggc ctg aaa 192  
Thr Tyr Tyr Thr Ser Ser Gly Glu Asp Ile Leu Ile Gly Gly Leu Lys  
50 55 60

cca ttt acc aag tac gag ttt gcg gta cag tcc cac gga gtg gat atg 240  
Pro Phe Thr Lys Tyr Glu Phe Ala Val Gln Ser His Gly Val Asp Met  
65 70 75 80

gat ggg 246  
Asp Gly

<210> 22  
<211> 82  
<212> PRT  
<213> Mus musculus

<400> 22  
Leu Pro Pro Ala His Val His Ala Glu Ser Asn Ser Ser Thr Ser Ile  
1 5 10 15  
Trp Leu Arg Trp Lys Lys Pro Asp Phe Thr Thr Val Lys Ile Val Asn  
20 25 30  
Tyr Thr Val Arg Phe Gly Pro Trp Gly Leu Arg Asn Ala Ser Leu Val  
35 40 45  
Thr Tyr Tyr Thr Ser Ser Gly Glu Asp Ile Leu Ile Gly Gly Leu Lys  
50 55 60  
Pro Phe Thr Lys Tyr Glu Phe Ala Val Gln Ser His Gly Val Asp Met  
65 70 75 80  
Asp Gly

<210> 23  
<211> 252  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
<222> (1)...(252)

<400> 23 48  
aca cct cct tct gac ctg cgc ctg agc ccc ctg aca cca tcc acc gtt  
Thr Pro Pro Ser Asp Leu Arg Leu Ser Pro Leu Thr Pro Ser Thr Val  
1 5 10 15

cgg tta cac tgg tgt ccc ccc acg gag ccc aat ggt gag att gtg gag 96  
Arg Leu His Trp Cys Pro Pro Thr Glu Pro Asn Gly Glu Ile Val Glu  
20 25 30

tat cta att ctc tac agc aac aac cac acc cag ccc gaa cac cag tgg	144		
Tyr Leu Ile Leu Tyr Ser Asn Asn His Thr Gln Pro Glu His Gln Trp			
35	40	45	
aca ctg ctc acc aca gag gga aac atc ttc agt gca gag gtc cat ggc	192		
Thr Leu Leu Thr Thr Glu Gly Asn Ile Phe Ser Ala Glu Val His Gly			
50	55	60	
cta gag agt gac act cgg tat ttc ttc aag atg gga gcc cgc aca gag	240		
Leu Glu Ser Asp Thr Arg Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu			
65	70	75	80
gtg ggg cct ggg	252		
Val Gly Pro Gly			

<210> 24  
<211> 84  
<212> PRT  
<213> Mus musculus

<400> 24  
Thr Pro Pro Ser Asp Leu Arg Leu Ser Pro Leu Thr Pro Ser Thr Val  
1 5 10 15  
Arg Leu His Trp Cys Pro Pro Thr Glu Pro Asn Gly Glu Ile Val Glu  
20 25 30  
Tyr Leu Ile Leu Tyr Ser Asn Asn His Thr Gln Pro Glu His Gln Trp  
35 40 45  
Thr Leu Leu Thr Thr Glu Gly Asn Ile Phe Ser Ala Glu Val His Gly  
50 55 60  
Leu Glu Ser Asp Thr Arg Tyr Phe Phe Lys Met Gly Ala Arg Thr Glu  
65 70 75 80  
Val Gly Pro Gly

<210> 25  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 25  
aagcaggtga gcctctctgg cccact 26

<210> 26  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 26  
cttgagacag atccacagct ccagac 26

<210> 27  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 27  
atccggaaag ggcttccctg tgggagctc 30

<210> 28  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 28  
gcgcgtggga catcgccag tgtatg 26

<210> 29  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 29  
gttccaggc ccgaacctgc agctctgt 28

<210> 30  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 30  
ccactcccct tgcctttgg tagtgaa 27

<210> 31  
<211> 21  
<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 31

gtgctgaccc tctgcctgct g

21

<210> 32

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 32

ctctgtctgc tacactggtc aa

22

<210> 33

<211> 18

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 33

tggacgccaa ggagttgg

18

<210> 34

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 34

caaatcccac agaacaggaa

19

<210> 35

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide primer

<400> 35

acggggcatca tcgtggg

17

<210> 36

<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 36  
gaggaggaca atccgggaag ggctt 25

<210> 37  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 37  
tcaaggcgtt gacacttgac tgtg 24

<210> 38  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 38  
taatctcaca gtgatgagag gaga 24

<210> 39  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 39  
ctgtgtctca atcttgaaca aacaca 26

<210> 40  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 40  
ggaagagaga cagtaaacat ttgcgt 25

<210> 41  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 41  
ctcccttcct tcctgatcgt ttcc 24

<210> 42  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> oligonucleotide primer

<400> 42  
cggtctctcaa gcactgcaga ttttg 25

<210> 43  
<211> 500  
<212> DNA  
<213> Mus musculus

<220>  
<221> CDS  
<222> (276) ... (338)

<400> 43  
aggctgtgg cgcgcccccg cgtgtcccct gtgggtgcagg gtggccacac tggccggggcg 60  
ccccccgcgtg ggccgcgtac ccaagatggc gatggagggg cggcgagct ggccgcggcc 120  
ccggcccccc cgccggcccc cgctcgccccc cggcccccggaa ggcccgccgc cccggccgcgg 180  
cgccgcgcct cccggagcca ctgacgcggc gcgcgcctc cccggccggc ggcccgaggcg 240  
ccggacgcg gccgcagcgg cccgagcccg gccct atg gcg cgg gcg gac acg 293  
Met Ala Arg Ala Asp Thr  
1 5

ggc cgc ggg ctc ctg gtg ctg acc ttc tgc ctg ctg tcc gcg cgc 338  
Gly Arg Gly Leu Leu Val Leu Thr Phe Cys Leu Leu Ser Ala Arg  
10 15 20

ggtaagggcc cgggtggcccg cagtcgcgag tgggcgtccc cggcgcccgatgcgtgcg 398  
cgccggggcc tgtggggact tgcccccagg gggtgtgtgt cttgtgtgc cacagcctgg 458  
caccgtgcgt gtcccccgtgc gcgtggccct tgtgcgtgc ag 500

<210> 44  
<211> 21  
<212> PRT  
<213> Mus musculus

<400> 44

Met Ala Arg Ala Asp Thr Gly Arg Gly Leu Leu Val Leu Thr Phe Cys  
1 5 10 15  
Leu Leu Ser Ala Arg  
20

<210> 45

<211> 3756

<212> DNA

<213> Mus musculus

<400> 45

atggcgccgg cgacacacggg ccgcgggctc ctggtgctga cttctgcct gctgtcccg 60  
cgcgccggagc tgccattgcc ccaggagaca actgtcaagc tgagctgtga tgagggacc 120  
ctgcaagtga tcctgggccc tgagcaggct gtggtgctgg actgcacttt gggggctaca 180  
gctgtggc ctccgaccag ggtgacatgg agcaaggatg gagacactgt actagagcat 240  
gagaacctgc acctgttacc caatggctcc ctgtggctgt ctcacccct agagcaagaa 300  
gacagcgatg atgaggaagc tcttaggatc tggaaggtca ctgagggcag ctattcctgt 360  
ctggcccaca gcccgcctagg agtggtgccc agccagggtt ctgtggtcaa gcttgcac 420  
ctcgaagact tctctctgca ccccgagttc cagattgtgg aggagaacgg gacagcacgc 480  
tttgaatgcc acaccaaggg cttccagcc cccatcatta cttggggaaaa ggaccagg 540  
accgtgcctg aggagccccg gtcataact cttccaaatg ggctcctcca gatccatag 600  
gtccaggaca gtgatgcagg ctccctaccgc tgcgtggcca ccaattcagc ccgcacacga 660  
ttcagccagg aggccctcgct cactgtggcc ctcaaggggt ctttggaggg taccagg 720  
caggatgtgg tcattgtggc agcccccagag aacaccacgg tagtgtctgg acagaatgt 780  
gtgatggagt gcgtggcctc tgctgacccc accccttttgc tgcgtggggt ccgcacagg 840  
ggaaagccta tctccacgga tgcatacggtt ctggggccga ccaatctact catgcac 900  
gcccgcctc ggcactctgg agtctatgtc tgcgcggca acaagccct cacgcgtgac 960  
ttcgccactg cggctgctga gtcggaggtt cttgtggccc cagccatetc gcaggcaccc 1020  
gaggcgctct cgcggacgcg gcccgacacc gcgcgttcg tgcgtggggc gtccggggag 1080  
ccacggcccg cgctgcactg gtcgcacgac gggatcccgt tgcgcacccaa tggcgcgtc 1140  
aagggtgcagg gcgggtggcgg cagttggc atcactcaga tggcctgca ggacgctggc 1200  
tactaccagt gcgttagcaga aaacagcgcg ggaactgcct tgcgtggcgc gcccctggcg 1260  
gtagtgggtgc gcggaggggct gcccagcgcg ccgactcggg tcaacgcccac gcccgtgagc 1320  
agtcctctg tgctgggtggc ctgggagcgg cctgagttgc acagcggaca aatattggc 1380  
ttctctcttc actacaaaaa ggcaaggaaa gtggacaatg tggagttacca gtttgcagta 1440  
aacaatgaca ccacagagct gcagggttcgg gaccttggaa ccaacacgga ttatgagttc 1500  
tacgtgggtgc cctactccca gtcggggggcc agccgaacct ccagcccacgc cctgggtcat 1560  
acactggacg atgtccccag cgcggacccc cagttaccc tgcgtggccc caaccctcg 1620  
gacatcagggt tggcatggct gcccctgccc tccagcctga gcaatggaca ggtgtgtgaa 1680  
tacaagatag agtacggttt ggggaaggaa gatcagggtt tctccacccga ggtgcctgg 1740  
aatgagacac aacttacgtt aaactcactt cagccaaaca aagtgtaccc agtccggatt 1800  
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